



WEA113

0.75- 2.2 GHz LOW NOISE WIDE BAND AMPLIFIER

REV B
April 2010

Key Features



- 0.75 ~ 2.2 GHz
- 0.80 dB Noise Figure
- 34.0 DBm Output IP₃
- 18.0 dB Gain
- +/-1.0 dB Gain Flatness
- 19.0 dBm P_{1dB}
- 1.35:1 VSWR
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

WEA113 integrates WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband, high linearity, and unconditional stable performances together. With single +5.0V DC operation, the amplifier has optimal input and output matching in the specified frequency range at 50-Ohm impedance system. The amplifier has standard SMA connectorized WP-10E gold plated housing.

Applications

- Mobile Infrastructures
- GPS
- CATV/DBS
- WiMAX
- Security System
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications WEA113 at room temperature

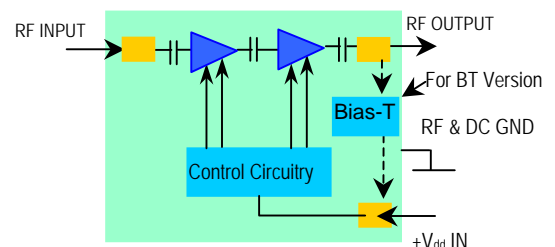
| Index | Testing Item | Symbol | Test Constraints | Min | Nom | Max | Unit |
|-------|---------------------------------------|----------------------|--|------|--------|--------|-------|
| 1 | Gain | S ₂₁ | 0.75 – 2.2 GHz | 17 | | 21 | dB |
| 2 | Gain Variation | ΔG | 0.75 – 2.2 GHz | | +/- 1 | +/-1.5 | dB |
| 3 | Input VSWR | SWR ₁ | 0.75 – 2.2 GHz | | 1.35:1 | 1.45:1 | Ratio |
| 4 | Output VSWR | SWR ₂ | 0.75 – 2.2 GHz | | 1.35:1 | 1.45:1 | Ratio |
| 5 | Reverse Isolation | S ₁₂ | 0.75 – 2.2 GHz | | 20 | | dB |
| 6 | Noise figure | NF | 0.75 – 2.2 GHz | | 0.8 | 1.0 | dB |
| 7 | Output Power 1dB compression Point | P _{1dB} | 0.75 – 2.2 GHz | 17 | 19 | | dBm |
| 8 | Output-Third-Order Interception point | IP ₃ | Two-Tone, P _{out} +0 dBm each, 1 MHz separation | 32 | 34 | | dBm |
| 9 | Current Consumption | I _{dd} | V _{dd} = +5 V | | 60 | | mA |
| 10 | Power Supply Voltage | V _{dd} | | +4.7 | +5 | +5.3 | V |
| 11 | Thermal Resistance | R _{th,c} | Junction to case | | | 220 | °C/W |
| 12 | Operating Temperature | T _o | | -40 | | +85 | °C |
| 13 | Maximum Average RF Input Power | P _{IN, MAX} | DC – 6.0 GHz | | | 10 | dBm |

Absolute Maximum Ratings

| Parameters | Units | Ratings |
|-------------------------|-------|-----------|
| DC Power Supply Voltage | V | 6.0 |
| Drain Current | mA | 100 |
| Total Power Dissipation | mW | 500 |
| RF Input Power | dBm | 10 |
| Channel Temperature | °C | 150 |
| Storage Temperature | °C | -55 ~ 125 |
| Operating Temperature | °C | -40 ~ 85 |
| Thermal Resistance | °C/W | 220 |

Operation of this device above any one of these parameters may cause permanent damage.

Functional Block Diagram



Ordering Information

| Model Number | Feature |
|--------------|--------------------------|
| WEA113 | Without Bias-T at Output |
| WEA113BT | With Bias-T at Output |

Specifications and information are subject to change without notice.

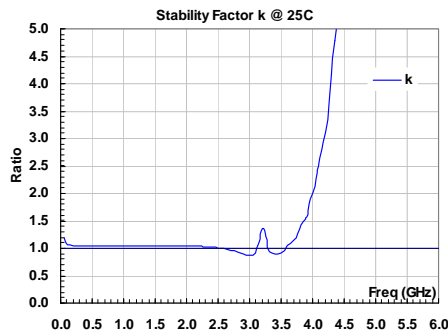
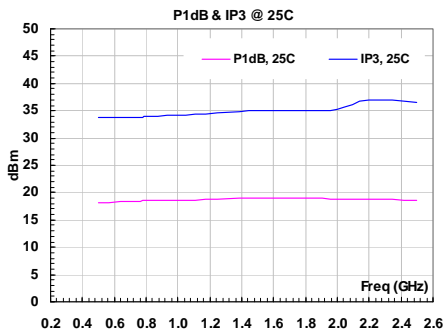
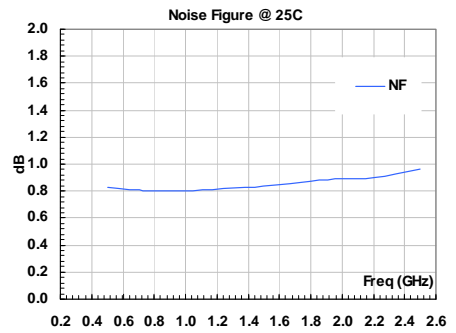
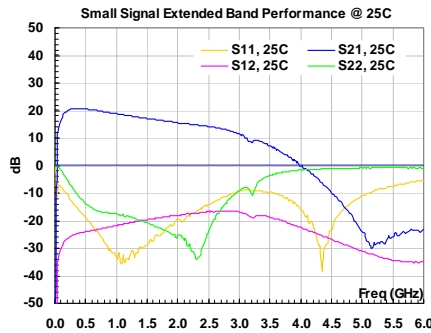
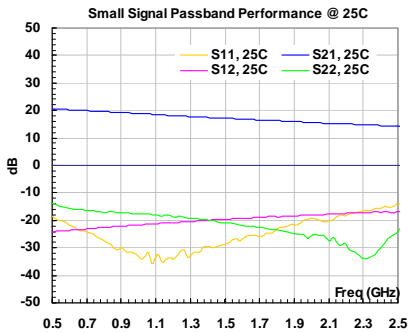


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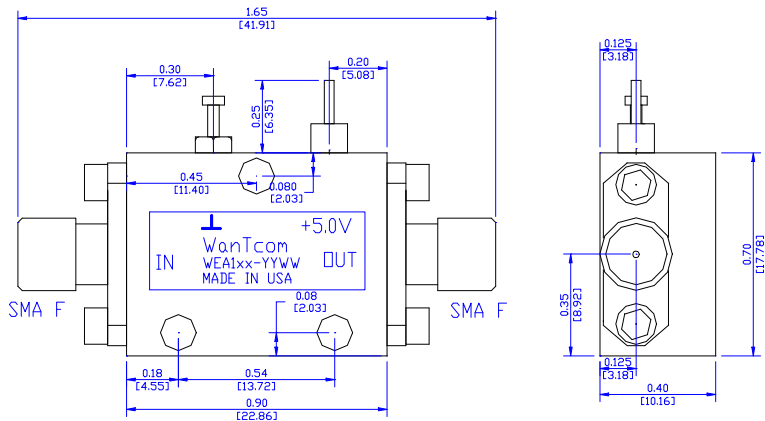
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Typical Data



Outline, WP-10E Housing

UNITS: INCH
[mm]
BODY: Brass
Finish: Gold Plating
RF Connector: SMA F Gold
V_{dd} PWR: Feed through



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Application Notes:

SMA Torque Wrench Selection

Always use a torque wrench with 5 ~ 6 inch-lb coupling torque setting for mating the SMA cables to the amplifier. Never use torque more than 8 inch-lb wrench for tightening the mating cable to the connector. Otherwise, the permanent damage will occur to the SMA connectors of the amplifier. 8710-1582 (5 inch-lb) is one of the ideal torque wrench choice from Agilent Technology.

DC Power Line Connection

Strip the insulation layer at the end of DC power supply wire. The stripped distance should be in the range of 0.100" to 0.200". The 24 ~ 26 American Wire Gauge wire is suitable. Wound the stripped terminal wire about 1 to 2 turns on the DC feed thru center pin. Solder the wounded wire and the center pin together. Clean the soldering area by Q-tip with alcohol to remove the flux and residue.

Repeat the process to solder the DC return wire on the ground turret.

Mounting the Amplifier

Use three pieces of #4-40 with longer than 9/16" screws for mounting the amplifier on a metal-based chase. Flat and spring washers are needed to prevent the screw loosening during the shock and vibration. Always use the appropriate torque setting of the power screwdriver to mount them.
